

Cub Cadet

Owner's Manual

**GEAR DRIVE
HOME
TRACTORS**



Important:
**Read Safety Rules and
Instructions Carefully**

Thank you for purchasing
an American-built product.

Model Numbers
805 (192)
1105 (292)
1605 (392)

CUB CADET CORPORATION • P.O. BOX 36930 • CLEVELAND, OHIO 44136
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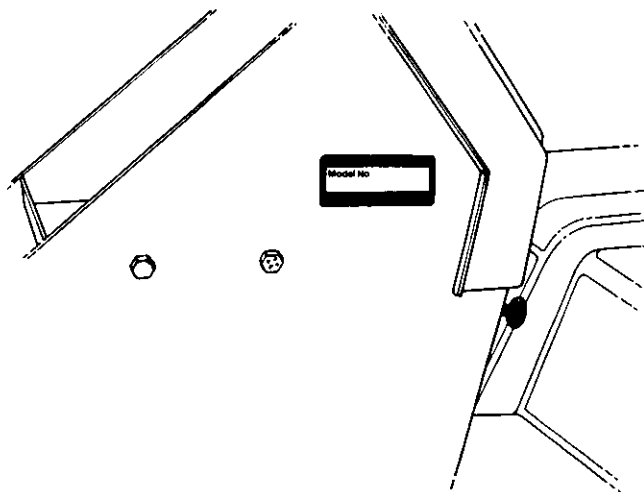
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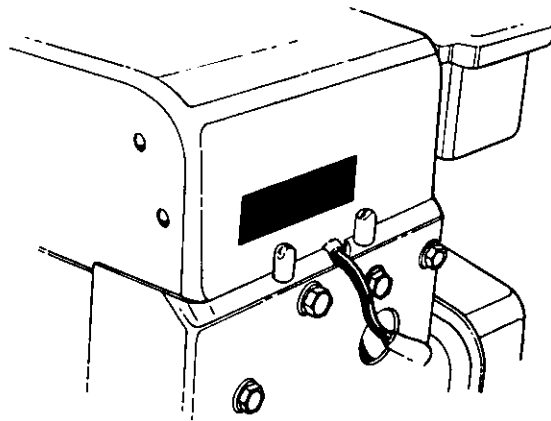
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SERIAL NUMBER LOCATION



Serial number plate is located on left hand side frame.

NOTE: LEFT and RIGHT indicate the left and right sides of the tractor when facing forward in the driver's seat. Reference to FRONT indicates the grille end of the tractor; to REAR the drawbar end.



Engine serial number plate is located on the engine shroud.

NOTE: This manual covers 8, 11 and 16 horsepower models. Illustration above shows an 11 horsepower engine.

CHASSIS S/N _____

ENGINE S/N _____

MODEL _____

DELIVERY
DATE _____



This unit is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester meeting applicable local or state laws (if any). If a spark arrester is used, it should be maintained in effective working order by the operator.

In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands.

WORK SAFELY—FOLLOW THESE RULES



Instructions given with this symbol are for personal safety. Be sure you and your workers follow them.

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT

1. Read this owner's manual carefully in its entirety before attempting to assemble or operate this unit. Keep this manual in a safe place for future and regular reference.
2. This unit is a precision piece of power equipment, not a plaything. Therefore exercise extreme caution at all times.
3. Know the controls and how to stop quickly—READ THIS OWNER'S MANUAL.
4. Do not allow children to operate vehicle. Do not allow adults to operate it without proper instruction. Only persons well acquainted with these rules of safe operation should be allowed to use your tractor.
5. No one should operate this unit while intoxicated or while taking medication that impairs the senses or reactions.
6. Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts to avoid entanglement in the moving parts. Never operate a unit in bare feet, sandals, or sneakers.
7. To prevent injury, do not carry passengers or give rides. Keep children, pets and bystanders out of the area while mowing. Only the operator should ride on the unit and only ride in the seat.
8. Check overhead clearance carefully before driving under power lines, guy wires, bridges or low hanging tree branches, before entering or leaving buildings, or in any other situation where the operator may be struck or pulled from the unit, which could result in serious injury.
9. To maintain control of the unit and reduce the possibility of upset or collision, operate the tractor smoothly. Avoid erratic operation and excessive speed.
10. Keep the area of operation clear of all persons, particularly small children and pets. Stop engine when they are in the vicinity of your tractor. Although the area of operation should be completely cleared of foreign objects, a small object may have been overlooked and could be accidentally thrown by the mower in any direction and cause injury.
11. Clear work area of objects which might be picked up and thrown by the mower in any direction and cause injury.
12. Stop the blade(s) when crossing gravel drives, walks or roads.
13. Disengage all attachment clutches and shift into neutral before attempting to start engine.
14. Disengage power to attachment(s) and stop engine before leaving operating position.
15. Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times as the rotating blade(s) can cause injury.
16. Disengage power to attachment(s) and stop engine before making any repairs or adjustments.
17. Before attempting to unclog the mower or discharge chute, stop the engine. The mower blade(s) may continue to rotate for a few seconds after the engine is shut off. Therefore, be sure the blade(s) have stopped completely.
18. Disengage power to attachment(s) when transporting or not in use.
19. Take all possible precautions when leaving vehicle unattended such as disengaging power-take-off, lowering attachments, shifting into neutral, setting parking brake, stopping engine and removing key.
20. Do not stop or start suddenly when going uphill or downhill. Mow up and down face of steep slopes; never across the face. Use extreme caution if it is necessary to drive the tractor up an incline or back the tractor down an incline because the front of the tractor could lift and rapidly flip over backward which could cause serious injury.
21. Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Always keep the tractor in gear when going down steep hills to take advantage of engine braking action.
22. Stay alert for holes in terrain and other hidden hazards.
23. Use care when pulling loads or using heavy equipment.
 - A. Use only approved drawbar hitch points.
 - B. Limit loads to those you can safely control.
 - C. Do not turn sharply. Use care when backing.
 - D. Use counterweight(s) or wheel weights when suggested in owner's manual.
24. Watch out for traffic when crossing or near roadways.
25. When using any attachments, never direct discharge of material toward bystanders nor allow anyone near vehicle while in operation.
26. Handle fuel with care. It is highly flammable.
 - A. Use approved fuel container.
 - B. Never remove cap or add fuel to a running or hot engine or fill fuel tank indoors. Wipe up spilled fuel.
 - C. Open doors if engine is run in garage. Exhaust fumes are dangerous. Do not run engine indoors.
27. Keep the vehicle and attachments in good operating condition, and keep safety devices in place. Use guards as instructed in operator's manual.
28. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.

29. Never store the equipment with fuel in the tank inside a building where fumes may reach an open flame or spark. Allow engine to cool before storing in any enclosure.
30. To reduce fire hazard, keep engine free of grass, leaves or excessive grease.
31. The vehicle and attachments should be stopped and inspected for damage after striking a foreign object. The damage should be repaired before restarting and operating the equipment.
32. Do not change the engine governor settings or overspeed the engine.
33. When using the vehicle with mower, proceed as follows:
 - (1) Mow only in daylight or in good artificial light.
 - (2) Never make a cutting height adjustment while engine is running if operator must dismount to do so.
 - (3) Shut the engine off and wait until the

blade comes to a complete stop before removing the grass catcher.

- (4) Check blade mounting bolts for proper tightness at frequent intervals.
34. Look behind to make sure the area is clear before placing the transmission in reverse and continue looking behind while backing up. Disengage blades before shifting into reverse and backing up.
35. This unit **should not** be driven up a ramp onto a trailer or truck under power, because the unit could tip over, causing serious personal injury. The unit must be pushed manually to load properly.

PRODUCT GRAPHICS

Keep safety product graphics (decals) clean. Replace any safety product graphic that is damaged, destroyed, missing, painted over or can no longer be read. Replacement safety product graphics are available through your local dealer.

CAUTION

RECEIVE INSTRUCTION — Read operator's manual. Learn to operate this machine SAFELY. Don't risk INJURY or DEATH.

1. Before starting engine or operation: Be familiar with controls. Be in operator's position with transmission in neutral, PTO turned off, and brake depressed.
2. Keep shields in place. Keep away from moving parts.
3. NO RIDERS! Keep all people and pets a safe distance away.
4. Don't point mower discharge at people.
5. Avoid slopes. Tractors can be rolled over.
6. Before leaving operator's position. Shut off PTO. Place transmission in neutral. Set parking brake. Shut off engine. Remove ignition key. Wait for all movement to stop before servicing or cleaning.
7. Do not fill gasoline tank when engine is running. Tighten cap securely.

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GENERAL SAFETY INSTRUCTIONS CAUTION LOCATED ON THE FRAME COVER.

CAUTION

Electrical system is 12 volt negative ground. When using booster with jumper cables, precautions must be taken to prevent personal injury or damage to electrical parts.

1. Attach one end of jumper cable to positive terminal of booster battery and other end to positive terminal of vehicle battery.
2. Attach one end of second cable to negative terminal of booster battery and other end to vehicle frame away from battery.
3. To remove cables, reverse above sequence exactly to avoid sparks. See operator's manual for additional information.

CAUTION—BOOSTER BATTERY INSTRUCTIONS
LOCATED UNDER THE HOOD.

CONTROLS

Your Cub Cadet Tractor has been safety engineered. Thoroughly acquaint yourself with all the instruments and controls before attempting to start or operate the tractor.

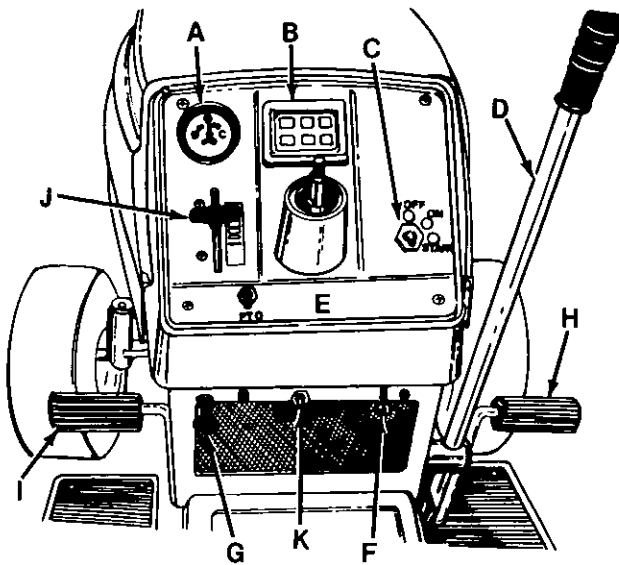


FIGURE 1.

- A. Charge Indicator
- B. Electronic Monitor (11 and 16 H.P. Units Only)
- C. Ignition Switch
- ← D. Lift Control Lever
- E. Power Take-Off (PTO)
- F. Parking Brake Lever
- G. Choke Control
- H. Brake Pedal
- I. Clutch Pedal
- J. Throttle Control Lever
- K. Light Switch (16 H.P. Only)

A. CHARGE INDICATOR

This instrument indicates whether the alternator is charging or the battery is discharging. If it shows discharge continuously, investigate the cause to avoid completely discharging the battery and possible damage to the charging circuit. See figure 1.

B. ELECTRONIC MONITOR (See figure 2.)

In reverse gear—will be illuminated when tractor is in reverse. Light **must** be **off** to start tractor.

Do Not engage PTO—will be illuminated if PTO switch is engaged while tractor is in reverse.

NOTE: PTO will not be engaged with tractor in reverse—switch only will engage.

PTO on—light will be illuminated when PTO switch is engaged. Light **must** be **off** to start tractor.

← **Place in neutral**—light will be illuminated when starting tractor and gear shift is not in neutral. Light **must** be **off** to start tractor.

Full throttle required (two indicators)—top light will be illuminated when the PTO is engaged. Bottom light will be illuminated when the light switch is **on** (on units so equipped).

NOTE: The unit should be run at **full throttle** when using PTO operated equipment or when the headlights are **on** (on units so equipped).

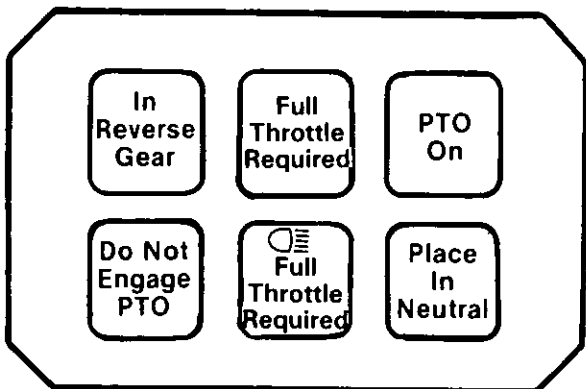


FIGURE 2.

C. IGNITION SWITCH

The ignition switch is a three position switch. Turn key to "START" position when engine starts, then release key. Key will retract to "ON" position. Turn key to "OFF" position to stop engine. See figure 1.



Remove the key from the tractor when the tractor is not in use to prevent accidental starting and battery discharge.

D. LIFT CONTROL LEVER

This control lever is used to raise and lower the cutting deck and other attachments. See figure 1.

E. POWER TAKE-OFF (PTO)

The power take-off is an electric clutch operated by a toggle switch on the left side of the instrument panel. See figure 1. When PTO is engaged, throttle should be in fast position.

F. PARKING BRAKE LEVER

The parking brake lever is located on the right side of the pedestal below the instrument panel. To operate, simultaneously depress clutch and brake pedals as you pull the parking brake lever up and out (towards the operator) to lock. To disengage parking brake, simultaneously depress clutch and brake pedal, lift parking brake lever up and release. The parking brake lever will retract. Always lock the parking brake when tractor is not in use. See figure 1.

G. CHOKE CONTROL

The choke control is located on left side of the pedestal below the instrument panel. The choke control is operated manually. Pull knob out to choke engine. Push knob in to open choke. See figure 1.

H. BRAKE PEDAL

The brake pedal is located on the right side of the tractor. See figure 1.

I. CLUTCH PEDAL

The clutch pedal is located on the left side of the tractor. See figure 1. When the clutch pedal is depressed, the drive belt is disengaged from the engine pulley.

J. THROTTLE CONTROL LEVER

This lever controls the speed of the engine. When set in a given position, it will maintain a uniform engine speed. See figure 1.

When using power take-off operated equipment, best performance is achieved with the throttle lever in the "FAST" position.



This symbol shows slow position.

This symbol shows fast position.

K. LIGHT SWITCH (16 H.P. units only)

The lights are turned on and off by a toggle switch on the center of instrument panel. See figure 1. Flip switch up for on, down for off. When lights are on, throttle should be in fast position.

INTERLOCKS (See figures 3 and 4.)

Interlock safety switches are located under the right hand fender, the PTO switch and the seat.

The safety starting switches, activated by the gear shift lever and the power take-off clutch switch, serve to prevent starting the engine accidentally. The gear shift lever must be in neutral and the PTO switch in the "OFF" position before engine will start.

When using PTO operated equipment, the operator must remain in tractor seat at all times. If operator should leave tractor seat without turning off the PTO switch, the engine will automatically shut off. In addition, the PTO switch must be in the "OFF" position when shifting tractor into reverse or the PTO will shut off automatically. To re-engage the PTO, shift unit into neutral. Move PTO switch to the "OFF" position and then reactivate PTO.

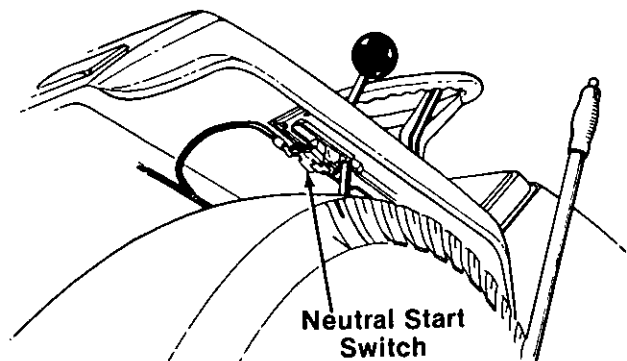


FIGURE 3.

Reverse Switch
and PTO Indicator
Switch

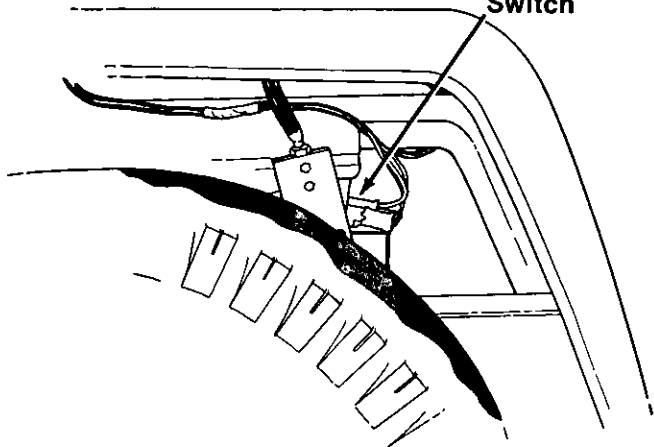


FIGURE 4.
FUEL TANK

The fuel tank is located under the seat. See figure 5.

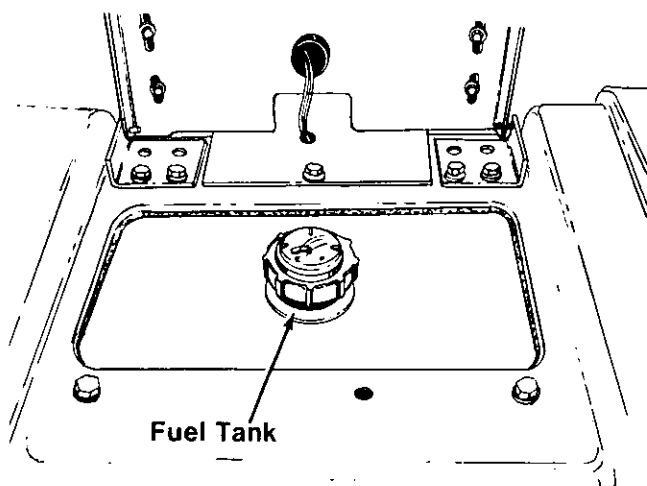


FIGURE 5.
FUEL SHUT-OFF VALVE

The fuel shut-off valve is located under the rear fender. See figure 6.

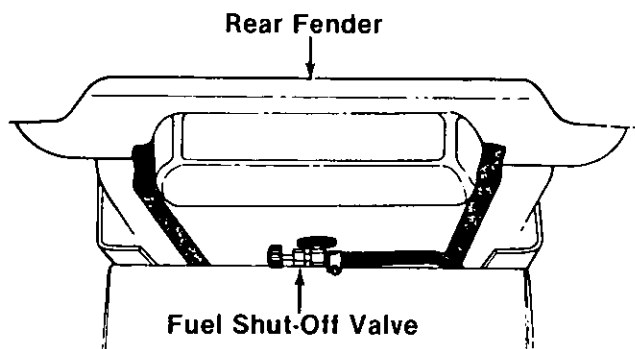


FIGURE 6.

ENGINE OIL

The engine oil fill is located on the side of the engine. Figure 7 shows an 11 H.P. engine.

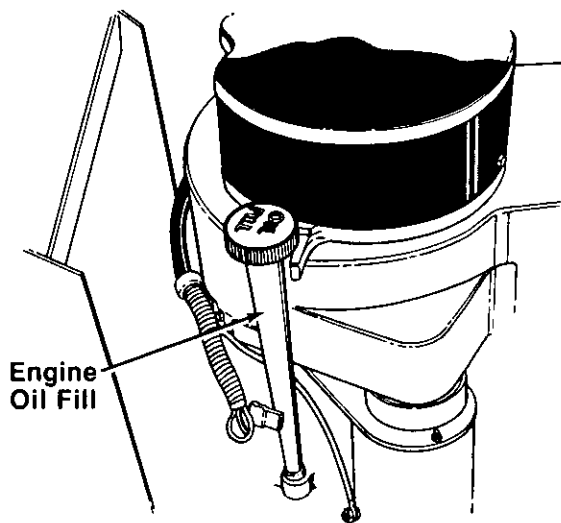


FIGURE 7.

OPERATION

PRE-OPERATION CHECKLIST

1. Check Oil Level
2. Fill Fuel Tank with Regular or Unleaded Gasoline

ENGINE OIL REQUIREMENTS

RECOMMENDED OIL

Ambient Temperature

Above 40°F
0°F to 100°F
Below 20°F

Viscosity (Grade SF)

SAE 30
SAE 10W30 or 10W40
SAE 5W20 or 5W30

DO NOT USE: Synthetic oil, non-detergent oil or other non-recommended oils.

DO NOT MIX different brands of oil.

ENGINE OIL CHECKS

Engine oil level should be checked before starting the unit **EVERY TIME**.

11 and 16 H.P. Units—Dipstick markings indicate upper and lower limits at a cold oil condition. Never overfill engine oil.

8 H.P. Units— Remove oil fill plug. Be certain oil level is maintained full to the point of overflowing.

BEFORE OPERATING YOUR TRACTOR

1. Before you operate the tractor, study this manual carefully. It has been prepared to help you operate and maintain your tractor with utmost efficiency.
2. Familiarize yourself with the operation of all the instruments and controls.
3. Fill the fuel tank with clean, fresh, regular or unleaded gasoline. See figure 8. Tank is located under the seat.

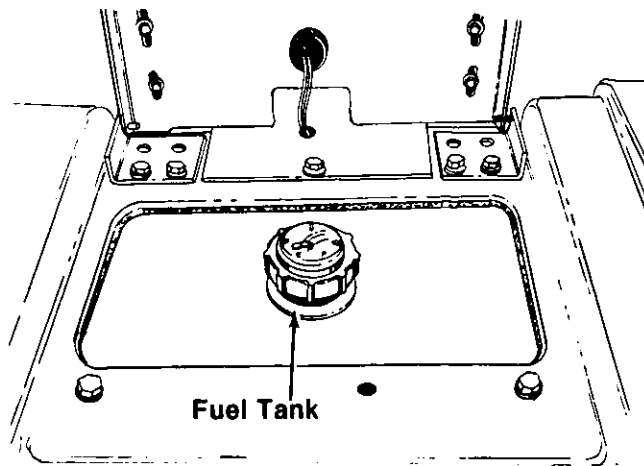


FIGURE 8.

CAUTION

RECEIVE INSTRUCTION — Read operator's manual. Learn to operate this machine SAFELY. Don't risk INJURY or DEATH.

1. Before starting engine or operation: Be familiar with controls. Be in operator's position with transmission in neutral, PTO turned off, and brake depressed.
2. Keep shields in place. Keep away from moving parts.
3. NO RIDERS! Keep all people and pets a safe distance away.
4. Don't point mower discharge at people.
5. Avoid slopes. Tractors can be rolled over.
6. Before leaving operator's position: Shut off PTO. Place transmission in neutral. Set parking brake. Shut off engine. Remove ignition key. Wait for all movement to stop before servicing or cleaning.
7. Do not fill gasoline tank when engine is running. Tighten cap securely.

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4. Check the tire inflation pressures.
5. Adjust the seat for operator's maximum comfort, visibility, and complete control of the tractor.
6. Refer to various sections of the operator's manual for additional information.

STARTING THE ENGINE

NOTE: This unit is equipped with a safety interlock system for your protection. The purpose of the safety interlock system is to prevent the engine from cranking or starting unless the transmission is in neutral and/or the parking brake is locked and the PTO switch is in the off position. In addition, the PTO switch must be in the off position when the unit is put into reverse or the PTO will shut off. Operator must remain in the seat when the PTO is on or the engine will shut off.



WARNING

Do not operate the tractor if the interlock system is malfunctioning because it is a safety device, designed for your protection.

TO START

1. Before starting engine run through pre-operation checklist. Be familiar with controls. Be in operator's position with gear shift lever in neutral, PTO switch off and parking brake locked.
2. Pull choke control button to full choke position. Less choking may be necessary due to variations in temperature, grade of fuel, etc. Little or no choking will be needed when the engine is warm.

3. Move throttle control forward to start position (never start engine at full throttle).
4. Turn key to start position. When engine starts, release key. Key will retract to on position.

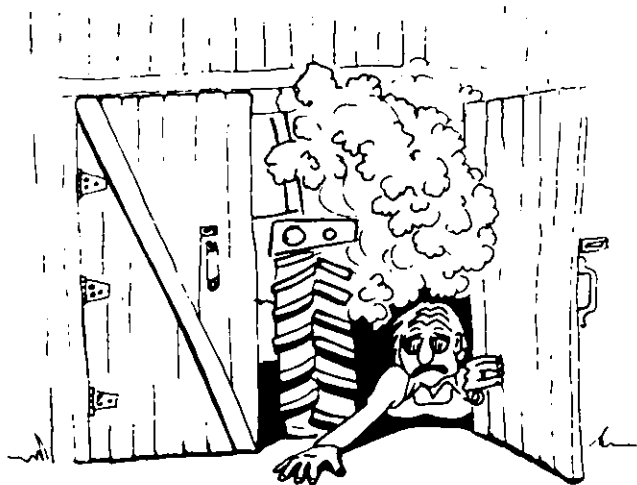
TO SHUT OFF

1. Return gear shift lever to neutral, engage parking brake and return PTO to off position.
2. Move throttle to slow position.
3. Turn key to off position and remove.



CAUTION

During operation do not run the engine in confined area such as storage building. Immediately move the tractor outside of the building.



WARNING

Exhaust fumes can kill. Never run engine inside buildings.

DRIVING THE TRACTOR

1. Release the parking brake. See figure 9. Move the throttle lever to the position where the engine operates best for the load to be handled.

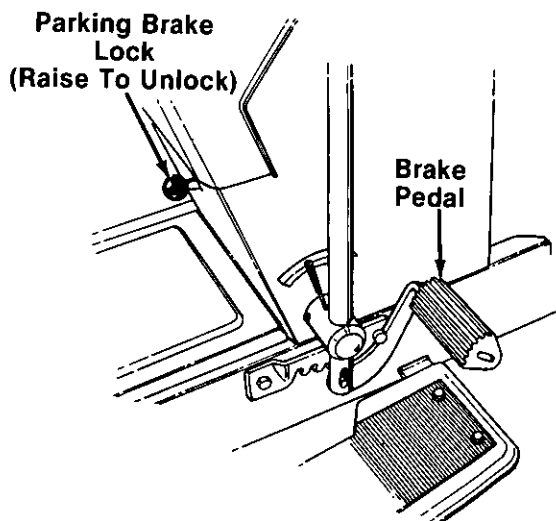


FIGURE 9.

2. Start the tractor in motion by depressing the clutch pedal and moving the gear shift lever into reverse or one of the five forward speeds. Slowly release the clutch pedal, and unit will move in direction indicated on the shift cover. See figure 10.

If smooth engagement cannot be obtained, an adjustment to the clutch rod may be required. NOTE: Clutch pedal must be depressed before moving gear shift lever.

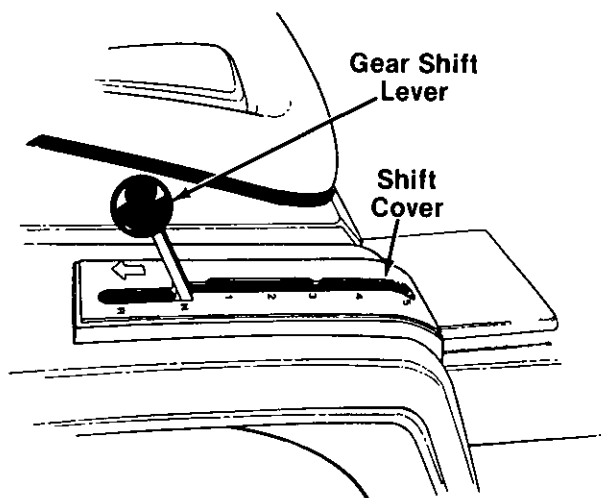


FIGURE 10.



CAUTION

Avoid sudden starts, excessive speed and sudden stops. Keep vehicle in gear when going down hills.

NOTE: When using power take-off operated equipment, best performance is achieved with the throttle lever in the "FAST" position.

Always be sure the rear wheels are free to turn. Under any adverse conditions, do not attempt to free the tractor by speeding up the engine and suddenly moving gear shift lever to extreme forward or reverse position. Try backing out instead of going forward.

Do not leave the seat of the tractor without locking the parking brake. If leaving the tractor unattended, stop engine by moving throttle to slow position. Turn the ignition key off and remove the key.

DRIVING ON SLOPES

Before operating the tractor on any slope, walk the slope to look for possible hazards such as rocks, mounds, ruts, stumps or other surface irregularities which could cause an upset.

Back the tractor with implement up the steepest portion of each slope you intend to work. If the tractor cannot negotiate the slope in reverse, the slope is too steep to be worked.



CAUTION

Always operate up or down the face of a slope. Do not drive so that the tractor may tip over sideways.

Avoid turns when driving on a slope. If a turn must be made, turn down the slope. Turning up a slope greatly increases the chance of a roll over.

Avoid stopping when driving up a slope. If it is necessary to stop while driving up a slope, start up smoothly and carefully to reduce the possibility of flipping the tractor over backward.

STOPPING THE TRACTOR

To stop the tractor, depress the brake pedal. Before dismounting always lock the parking brake, stop engine by moving throttle to slow position, disengage PTO switch and turn ignition off.



CAUTION

Always engage parking brake lock, lower equipment and shut off engine before dismounting. Never start engine from ground.

OPERATING THE POWER TAKE-OFF CLUTCH (PTO)

1. Move the throttle lever back to the medium or "SLOW" position.

2. Flip the toggle switch to the "RUN" position. See figure 11.

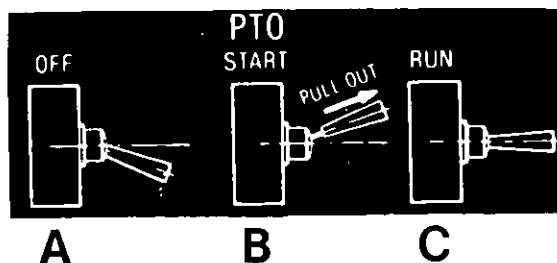


FIGURE 11.

- A. PTO switch must be in off position before starting unit and before shifting tractor into reverse.
 - B. To start the PTO, pull knob out and lift up (Note: Knob will retract into run position).
 - C. Position at which PTO will run if starting procedure has been completed. (Note: If engine is running and unit is shifted into reverse, the PTO will disengage. To reactivate PTO, pull knob out and lift up into start position. If PTO is running and the operator leaves the seat, the engine will shut off. To start engine, follow normal starting procedure.)
3. Advance throttle to operating speed (full speed).
 4. The operator must remain in tractor seat at all times. If operator should leave tractor seat without turning off the power take-off switch, the engine will automatically shut off.
 5. PTO switch must be in the "OFF" position when shifting the tractor into reverse or the PTO will shut off automatically. To reactivate the PTO, pull knob out, lift up into start position and release.

ADJUSTMENTS

ADJUSTING THE SEAT

Before starting the tractor, adjust the seat to the most comfortable driving position. Tilt the seat forward over the steering wheel, loosen the four bolts in the seat support, and slide the seat assembly forward or rearward to the position which is most comfortable for the operator. See figure 12.

Retighten the four bolts securely after the seat is repositioned.

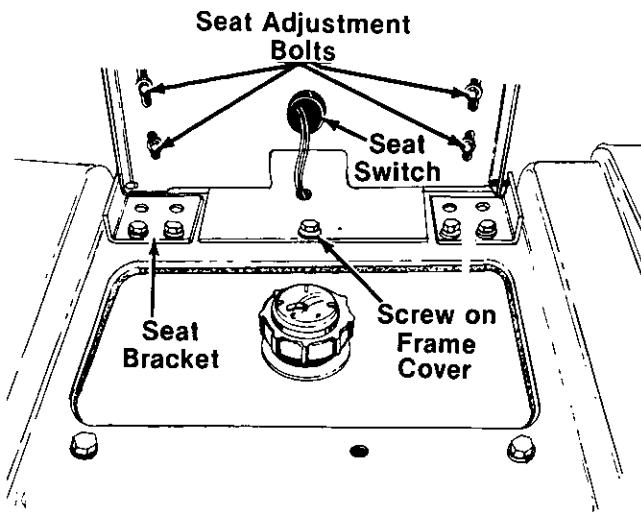


FIGURE 12.

FRAME COVER REMOVAL

To remove the frame cover, the seat assembly must be removed.

1. Remove two screws from one seat bracket. Slide seat assembly off the pin on the other seat bracket.
2. Remove screw and flat washer from frame cover as shown in figure 12.
3. Remove two screws holding frame cover to frame in the step through area (not shown).
4. Disconnect seat switch to harness.
5. Lift up and slide frame cover rearward from underneath the pedestal.
6. Reassemble frame cover and seat assembly in reverse order. Make certain all screws are tightened securely.

CLUTCH ROD ADJUSTMENT

Clutch rod adjustment is necessary when belt slippage occurs, or when clutch pedal bottoms out on the running board and does not return to the "up" position. If adjustment is needed, contact your authorized dealer.

ADJUSTING THE POWER TAKE-OFF CLUTCH

The clutch is factory adjusted and should not require further adjustment under normal operating conditions. However, if the clutch fails to operate properly check as follows:



CAUTION

To avoid possible injury, always disengage all clutches, move gear shift lever into neutral, set the parking brake lock, move throttle to slow position, and turn the ignition "OFF" before working on the machine.

Using a feeler gauge, check the air gap. See figure 13. Insert feeler gauge into one of three access slots located around the outside of the brake plate. The air gap should be .010-.015-inches. Adjust the self-locking nuts to obtain the proper clearance. Repeat the operation in all three access slots.

NOTE: If brake plate drags on clutch at .010-.015 inches air gap, increase air gap to .020-inches. After two hours of use, recheck and set back to .010-.015 inches.

If the above procedure does not work, see your authorized dealer.

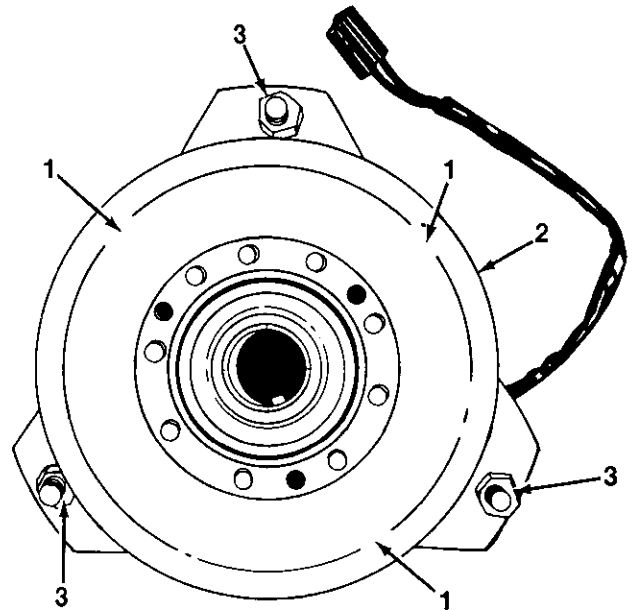


FIGURE 13.

1. Access slots
2. Brake plate
3. Self-locking nuts

ADJUSTING THE BRAKES

During normal operation of this machine, the brakes are subject to wear and will require periodic examination and adjustment.

To check the brake adjustment, place the gear shift lever in neutral position, lock the parking brake. You should not be able to push the tractor.

If the tractor can be pushed with the parking brake locked, or if the unit cannot be pushed with the parking brake released, brake adjustment is necessary.

To adjust the brake, proceed as follows.

1. Tighten the inside nut until the cam lever can not be moved by hand.

- Loosen the inside nut until the cam lever can be pushed forward so that there is a 1/8" to 3/16" space between the cam lever and stop bolt. See figure 14.
- Tighten the outside nut against the inside nut, using two 1/2" wrenches. See figure 14.
- If there is no more adjustment left at the two nuts, tighten the hex nut on the end of the brake rod, under the spring. See figure 15. Remove the hairpin cotter and clevis pin from the other end of the brake rod to disconnect it, and tighten the nut.

Recheck the adjustment, making certain correct adjustment is reached before operating the tractor.

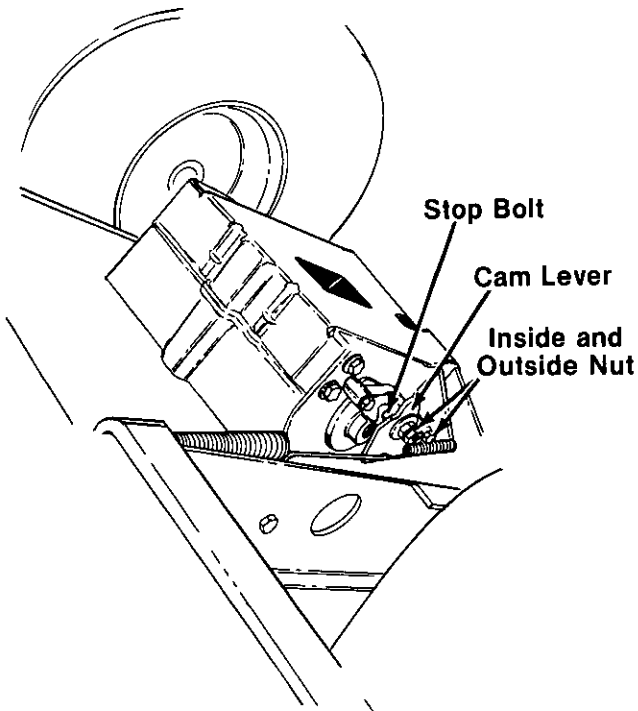


FIGURE 14.

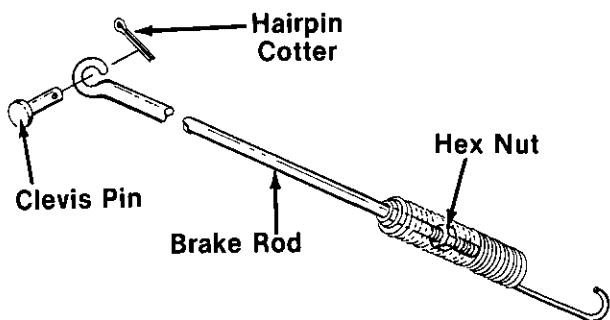


FIGURE 15.

WHEEL ALIGNMENT

The front wheels should toe-in approximately 1/8". Measure the distances A and B on the front wheels. See figure 16.

NOTE: Dimension B should be approximately 1/8 inch less than dimension A.

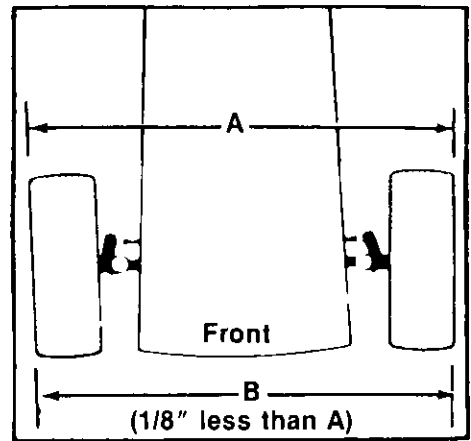


FIGURE 16.

Front wheel adjustments.

To adjust the toe-in remove one ball joint, loosen the lock nut "C" at the ball joint and turn the tie rod ball joint in or out as required. See figure 17.

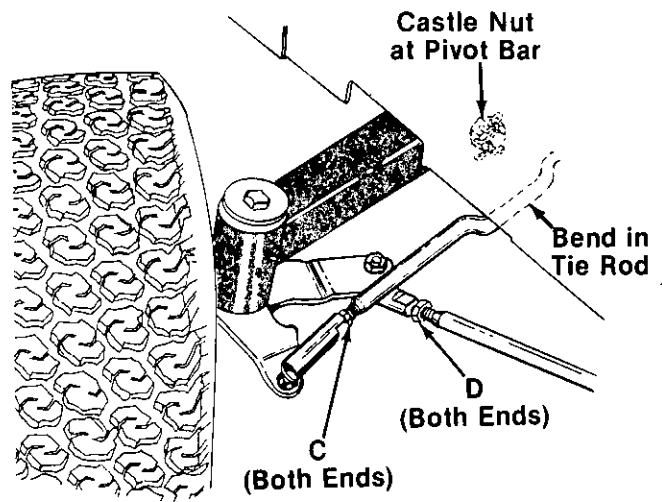


FIGURE 17.

NOTE

Tie rod has a bend in the center for clearance of castle nut on pivot bar. Bend must remain down as shown in figure 17.

TURNING RADIUS

The front wheels should have an equal angle for left and right turns. If adjustment is necessary, remove ball joint and loosen lock nut "D," turn the drag link ball joint clockwise or counterclockwise as required. See figure 17.



CAUTION

Be sure all parts are tightened securely.

LIFT CONTROL LEVER

The lift control lever is used to lift or lower equipment used with the tractor. The equipment can be set in five positions by depressing the button on the lever and releasing it when the desired position is reached. See figure 18.

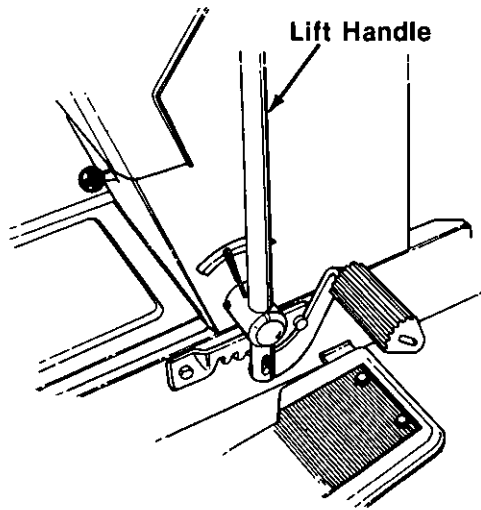


FIGURE 18.

MAINTENANCE

ENGINE OIL

The engine crankcase is filled with ship-away oil. This oil may be used for the first 5 hours of engine operation at temperatures between +90 degrees F. and 0 degrees F. If temperatures are not within this range, drain the oil from the crankcase and replace with new oil as specified in the "LUBRICATION TABLE." The engine oil must be drained and replaced with new oil every 30 hours of engine operation.

To aid starting, the selection of crankcase lubricating oils should be based on the lowest anticipated temperatures until the next drain period. Refer to "LUBRICATION TABLE."

Low Ash Engine Oil or other oil meeting API Service Classification SF is recommended. For maximum engine life select API SF oils with lowest levels of barium, calcium, or magnesium additives and minimum ash content (approximately 0.5%). Lubricant suppliers will normally furnish this information on their engine oils.

Regularly check the oil level of the engine crankcase to see that it is filled to the correct level.

NOTE: Check the oil level only while the engine is stopped.

11 and 16 H.P. Units—Always keep the oil level between the "FULL" and the "LOW" marks on the dipstick. When checking the oil level the dipstick must be withdrawn and wiped clean, then inserted all the way and withdrawn for a true reading.

8 H.P. Units—Always keep the oil level in the crankcase full to the point of overflowing.

Filling the Crankcase

To fill the crankcase with oil, place the tractor on a level surface. Clean the area around oil fill before removing oil filler cap and dipstick. (11 and 16 H.P. Units.)

8 H.P. Units—Remove oil fill plug. Fill crankcase to point of overflowing. POUR SLOWLY. Capacity 3 pints. Replace oil fill plug.

11 and 16 H.P. Units—Remove the cap and dipstick and fill to the full mark on the dipstick. POUR SLOWLY. Capacity 3 pints. When checking the oil level, push the dipstick assembly firmly but slowly until cap bottoms on tube. DO NOT OVERFILL. Dipstick assembly must be pushed fully into tube at all times when engine is operating.

NOTE: Never overfill the engine crankcase. Engine may overheat and/or damage may result if the crankcase is below the "LOW" mark or over the "FULL" mark.

AIR CLEANER (8 H.P. Units)

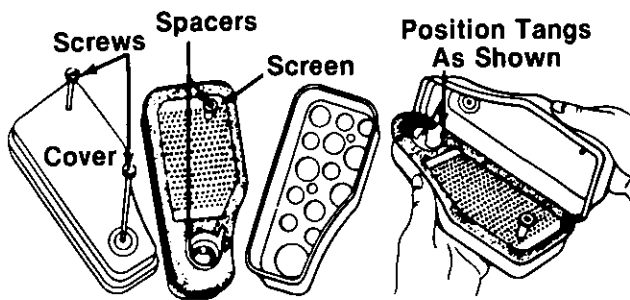
Clean and re-oil foam element at three month intervals or every 25 hours, whichever occurs first.

NOTE: Service more often under dusty conditions.

To Service Air Cleaner (Refer to figure 19)

1. Remove two screws and lift off complete air cleaner assembly.
2. Remove screen and spacers from foam element.
3. Remove foam element from air cleaner body.
 - a. Wash foam element in liquid detergent and water to remove dirt.
 - b. Wrap foam in cloth and squeeze dry.
 - c. Saturate foam in engine oil. Squeeze to distribute and remove excess oil.
4. Assemble parts. Securely fasten to carburetor with screws.

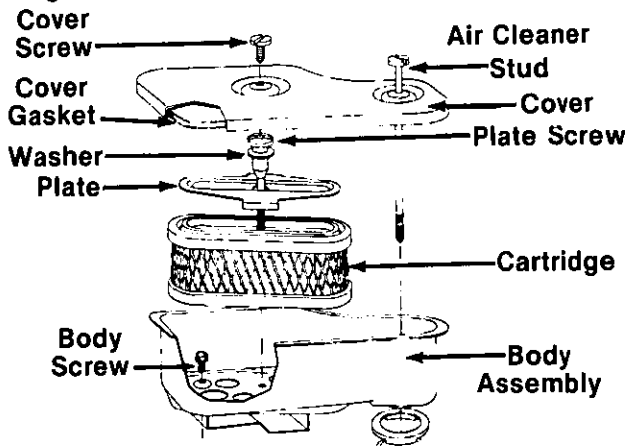
When assembling make certain the lip of the foam element extends over edge of the air cleaner body. The foam element lip will form a protective seal.



**FIGURE 19.—8 H.P. Units
AIR CLEANER (11 H.P. Units)**

1. Remove air cleaner stud, screw and cover. See figure 20. Replace cover gasket if damaged.
2. Remove plate screw, washer and plate.
3. Remove cartridge and clean air cleaner body carefully to prevent dirt from entering carburetor. Brush dirt from body through holes into duct.
4. Clean cartridge by tapping gently on flat surface.
 - a. If very dirty, replace cartridge or wash in a low or non-sudsing detergent and warm water solution.
 - b. Rinse thoroughly from outside in until water is clear.
 - c. Cartridge must be allowed to stand and air dry **thoroughly** before using.
5. Reassemble air cleaner.

NOTE: Petroleum solvents, such as kerosene, are not to be used to clean cartridge. They may cause deterioration of the cartridge. **Do not oil cartridge. Do not use pressurized air to clean or dry cartridge.**



**FIGURE 20.—11 H.P. Units
AIR CLEANER (16 H.P. Units)**

Servicing Foam Pre-Cleaner Element

Clean and re-oil foam pre-cleaner element at 3 month intervals or every 25 hours, whichever occurs first.

NOTE: Service more often under dusty conditions.

1. Remove knob and cover. See figure 21.
2. Remove foam pre-cleaner element by sliding it up off the paper cartridge.
3. a. Wash pre-cleaner element in liquid detergent and water.
 - b. Squeeze dry in cloth.
 - c. Saturate in engine oil. Squeeze to distribute oil evenly.
 - d. Wrap in shop towel and squeeze to remove excess oil.

Discard used element and replace with new one at least once a year.

Servicing Paper Cartridge

Yearly or every 100 hours, whichever occurs first, remove paper cartridge. Clean by tapping gently on flat surface. If very dirty, replace cartridge, or wash in a low or non-sudsing detergent and warm water solution. Rinse thoroughly with flowing water from inside out, until water is clear. Cartridge must be allowed to stand and air dry **thoroughly** before using. Service more often if necessary.

NOTE: Petroleum solvents, such as kerosene, are not to be used to clean cartridge. They may cause deterioration of the cartridge. **Do not oil cartridge. Do not use pressurized air to clean or dry cartridge.**

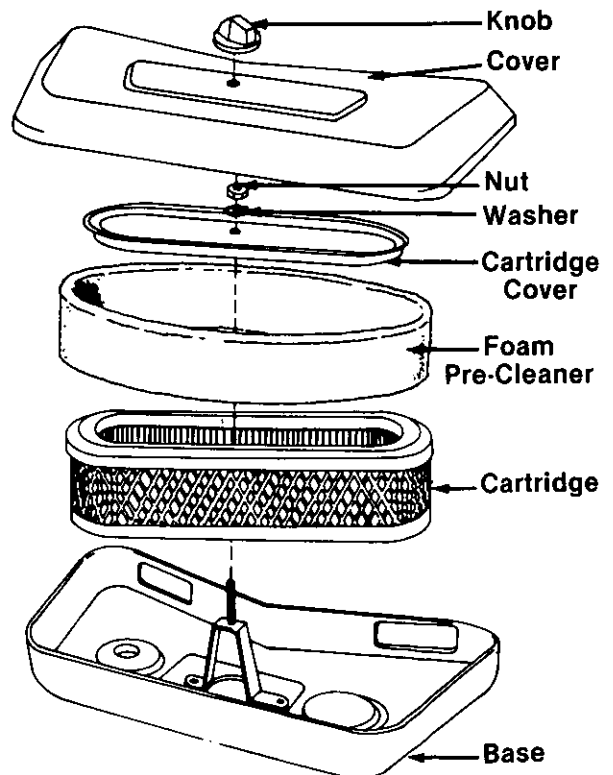


FIGURE 21.—16 H.P. Units

TRANSAXLE

The transaxle is lubricated and sealed at the factory and does not require checking. If disassembled for any reason, lubricate with 24 oz. of E.P. Lithium grease.

DRIVE BELT REPLACEMENT

If drive belt replacement is required, contact your authorized dealer.

BATTERY INFORMATION



WARNING

- A. Battery acid must be handled with great care as contact with it can burn and blister the skin. It is also advisable to wear protective clothing (goggles, rubber gloves and apron) when working with it.*
- B. Should battery acid accidentally splatter into the eyes or onto the face, rinse the affected area immediately with clean cold water and seek prompt medical attention.
- C. If acid spills on clothing, first dilute it with clean water, then neutralize with a solution of ammonia/water or baking soda/water.
- D. Since battery acid is corrosive, do not pour it into any sink or drain. Before discarding empty electrolyte containers, rinse them with a neutralizing solution.
- E. NEVER connect or disconnect charger clips to battery while charger is turned on as it can cause sparks.
- F. Keep all lighted materials (cigarettes, matches, lighters) away from the battery as the hydrogen gas generated during charging can be combustible.
- G. As a further precaution, only charge the battery in a well-ventilated area.

***Always shield eyes, protect skin and clothing when working near batteries.**



DANGER

BATTERIES CONTAIN SULFURIC ACID AND MAY CONTAIN EXPLOSIVE GASES (when electrolyte has been added).

KEEP BATTERIES OUT OF THE REACH OF CHILDREN.

MAINTENANCE OF BATTERY

1. Check electrolyte level periodically. Keep the level to the split rings. Use only distilled water or a good quality drinking water. Never add acid or any other chemicals to the battery after initial activation.
2. The battery should be checked with a hydrometer after every 25 hours of operation. If the specific gravity is less than 1.225, the battery should be recharged. Maximum charge rate 5 AMPS.
3. Coat the terminals and exposed wire with a thin coat of grease or petroleum jelly for longer service and protection against corrosion.
4. The battery should be kept clean. Any deposits of acid should be neutralized with baking soda and water. Be careful not to get this solution in the cells.
5. Avoid tipping the battery. Even a "sealed" battery will leak electrolyte when tipped.

STORAGE OF THE BATTERY

1. When storing battery for extended periods, disconnect battery cables. Removing battery from unit is recommended.
2. Keep the exterior of the battery clean, especially the top. A dirty battery will discharge itself.
3. Check the battery with a hydrometer. The battery must be stored with a full charge. A discharged battery will freeze.

Specific Gravity	Freezing Point
1.265	- 71° F.
1.250	- 62° F.
1.200	- 16° F.
1.150	5° F.
1.100	16° F.



NOTE

All batteries discharge during storage.

4. Recharge battery whenever the specific gravity is less than 1.225, before returning to service or every two months, whichever comes first.

COMMON CAUSES FOR BATTERY FAILURE

1. Overcharging
2. Undercharging
3. Lack of water
4. Loose hold downs and/or corroded connections
5. Excessive loads

6. Battery electrolyte substitutes
7. Freezing of electrolyte

NOTE: These failures do not constitute warranty.

BATTERY REMOVAL OR INSTALLATION



When removing the battery, follow this order of disassembly to prevent your wrench from shorting against the frame.

1. Remove the Negative cable.
2. Remove the Positive cable.

To install a battery:

1. Attach the Positive cable.
2. Attach the Negative cable.

BOOSTER BATTERIES AND CHARGING THE BATTERY



Batteries can explode during boosting or charging. Always wear proper eye protection, such as safety goggles.

If the electric circuit inside the battery is broken, charging or boosting can generate a spark inside the battery which may cause it to explode.

If the battery is discharged, and the reason for the discharge is unknown and if the lights or horn do not indicate some battery voltage, check the battery with a volt meter for an open circuit. Disconnect negative (-) battery cables. Connect the volt meter across battery terminals. If there is no voltage present, an open internal circuit is indicated. Replace the battery. If voltage is present, the battery is OK to charge or boost.

If using a battery charger, be certain the charger is turned off before connecting to the battery.

Charge in a well ventilated area.

Do not attempt to charge a frozen battery.

When required, a booster 12-volt battery may be connected in parallel with the 12-volt system on the tractor.

NOTE: All circuits must be turned "OFF." The electrical system is NEGATIVE (-) ground only. Reversed polarity will result in permanent damage to components of the electrical system.

When using a booster battery with jumper cables, precautions must be taken to prevent personal injury or damage to electrical parts.

JUMP STARTING

If jump starting is necessary use only a 12 volt battery for this purpose.

1. Attach the first jumper cable from the Positive terminal of the good battery to the Positive terminal of the dead battery.
2. Attach the second jumper cable from the Negative terminal of the good battery to the **FRAME OF THE UNIT WITH THE DEAD BATTERY.**

TIRES

Keep the pneumatic tires properly inflated. Over-inflation will cause operator discomfort. Under-inflation will cause short tire life.

Inflate the front and rear tires for normal or heavy load operations as shown in the following table.

Tire Size	Pounds per square inch
Front Tires	
15 x 6-6	12 PSI
Rear Tires	
20 x 10-8	10 PSI

Always check that the tire valve caps are in place and tightened securely to prevent loss of air and protect the valve core and stem.

Do not overload the tractor tires by mounting equipment on the tractor which exceeds the load capacity of the size of the tires on the tractor.

Mounting Tires On The Rim

After mounting a new or old tire on the rim, inflate to 20 pounds pressure to seat the tire bead on the rim flange. Then deflate the tire to the correct operating pressure.



Never inflate tires beyond 30 pounds per square inch to seat beads. Allowing air pressure to build within the assembly in an attempt to seat the beads is a dangerous practice. Inflation beyond 30 pounds per square inch pressure before seating bead may break the bead (or even the rim) with explosive force. If beads have not seated by the time pressure reaches 30 pounds per square inch, deflate the assembly, reposition the tire on the rim, re-lubricate then re-inflate. Inspect both sides of tire to be sure beads are evenly seated. If not, completely deflate tire, unseat beads and repeat entire mounting procedure. After seating beads, adjust inflation to recommended pressure.

OFF-SEASON STORAGE

If the machine is to be inoperative for a period longer than 30 days, the following procedures are recommended:

1. Remove dirty engine oil, fill with new oil and run the engine for about 5 minutes to let the oil circulate to all the parts.
2. Always set the throttle lever in slow position.
3. Check all the bolts and nuts, and tighten if necessary.

4. Remove the battery from the tractor recharge it, and adjust the electrolyte level. Store the battery in a dry and dark place. Never set directly on concrete.
5. Clean the engine and the entire tractor thoroughly.
6. Lubricate all lubrication points.
7. Protect tires and seat from sunlight. Inflate tires at regular intervals.

MOWING DECK—ADJUSTMENTS AND OPERATION

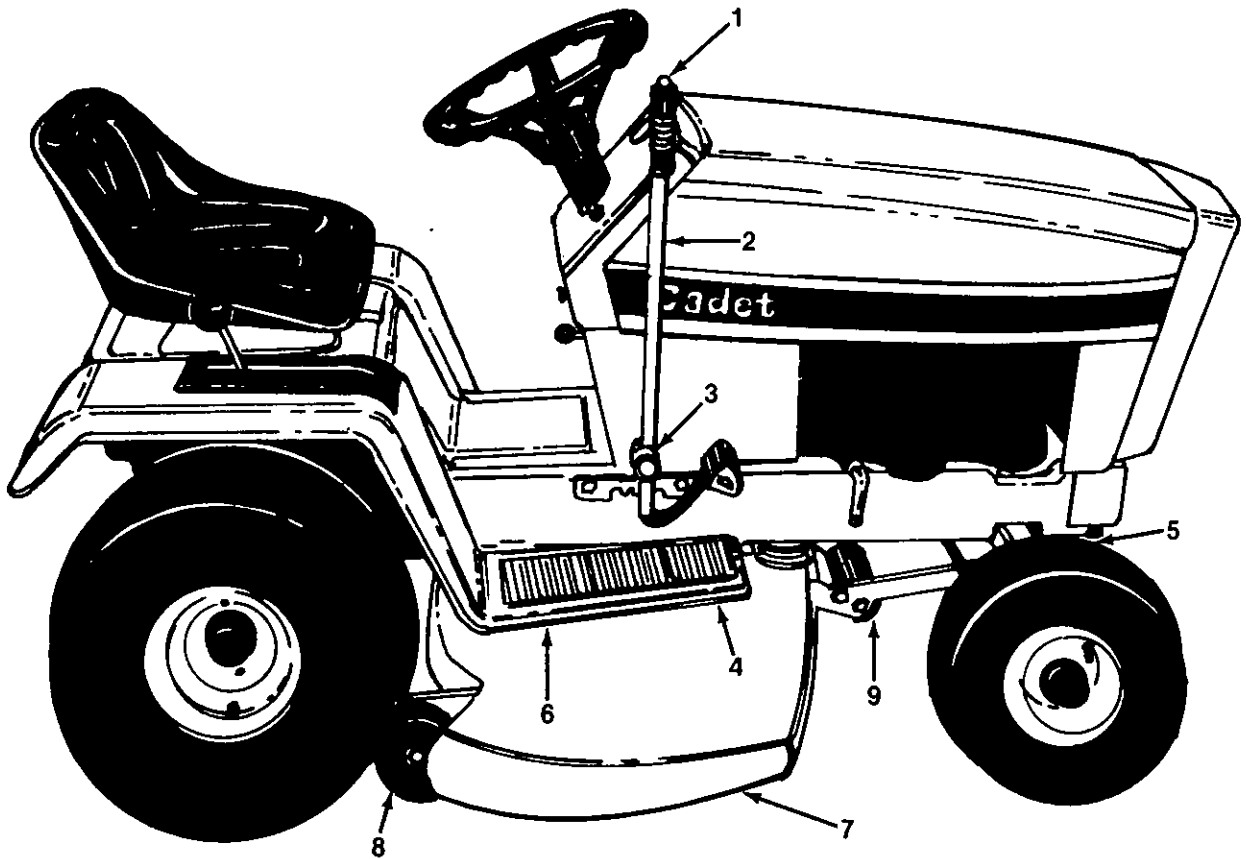


FIGURE 22. 36-inch mower shown—(44-inch mower is similar)

1. Lift Lever Release Button
2. Lift Lever
3. Lift Lever Position Decal
4. Mower Support Hangers
5. Quick Hitch Rod
6. Belt Shield
7. Deflector Shield
8. Gauge Wheels
9. Roller

LEVEL ADJUSTMENT



Before making any adjustments, turn off the machine, remove the key, and lock the parking brake to avoid accidental starting and injury.

NOTE

Check the tires for proper inflation before making a level and height adjustment. To level the mower, put the tractor on a level surface. A hard surface such as a garage floor or sidewalk is preferable.

Side to Side Leveling

The 36 and 44 inch mowers are equipped with two adjustable lift links. This feature allows the mower to be leveled. See figure 23.

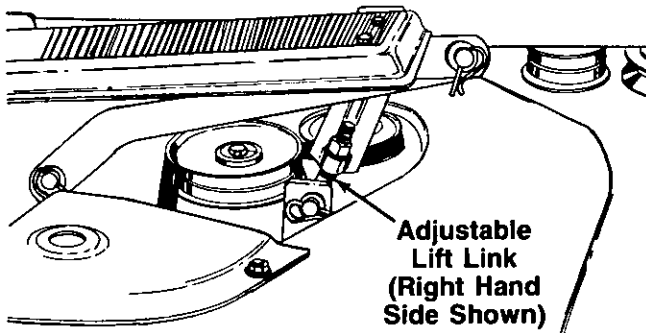


FIGURE 23.

To check the side to side leveling of the deck, place the unit on a hard, level surface. Disconnect the spark plug wire(s). Place the two outer blades parallel to the unit. Measure the distance from the front tip of blade to the surface on each side. If the measurements are not equal, lower the mower deck to the ground. Disconnect one of the adjustable links by removing the hair-pin cotter and flat washer which secure it to the deck. Turn the end of the link to the right or left as needed. Reconnect the adjustable link and raise the deck. Recheck the measurement on each side, and repeat adjustment until distances are equal.

NOTE

If the mower is not level, it will adversely affect the performance.

CUTTING HEIGHT

The mower can be set in multiple positions. Pull the lift handle back slightly and depress button on top of the lift handle. Release the button when the desired mower position is obtained. To return the mower to a specific position, note the position of the lift lever pointer in relation to the lever position decal before raising or lowering the mower.

GAUGE WHEELS AND CASTERS (44-inch Deck)

Set the gauge wheels and casters just off the hard surface by locating in the proper holes. The gauge wheels and casters prevent scalping and are not meant to set the cutting height. See figure 24. Gauge wheels and casters must be set in the same relative hole locations.

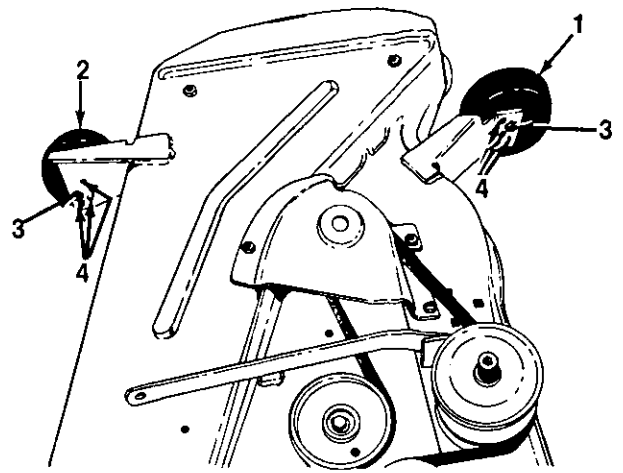


FIGURE 24.

- 1. Gauge Wheel
- 2. Caster
- 3. 3/8-inch Nut and Lock Washer
- 4. Adjustment Holes

GAUGE WHEELS (36-inch Deck)

Set the gauge wheels just off the hard surface by locating in the proper holes. The gauge wheels prevent scalping and are not meant to set the cutting height. See figure 25.

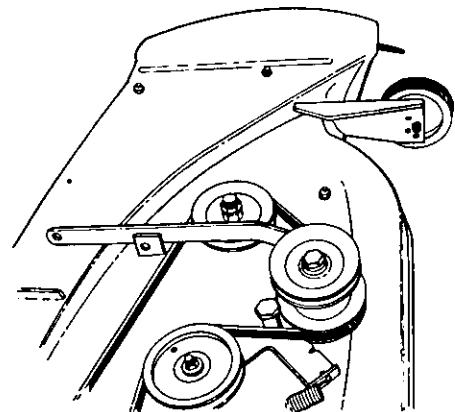


FIGURE 25.

STARTING THE MOWER

With the engine running at idle speed, start the power take-off clutch by moving the switch to "Run." Starting the mower with the engine at idle will reduce wear on the drive belt. Increase engine speed to full throttle.

NOTE

In heavy grass, full throttle may be needed when starting the mowing deck.

STOPPING THE MOWER

Move the power take-off switch to "Off" and reduce the engine speed.



When installing a new belt always check the condition of the pulleys and if they are not in satisfactory condition, replace them with new pulleys available at your authorized dealer.



Be sure narrow dimension of belt is in bottom of all pulley grooves.



Stop the tractor, disengage the power take-off, place all controls in neutral, engage the brake lock and stop the engine before performing any maintenance.

After the first 10 hours of operation check and retighten, if necessary, all nuts and bolts on the machine. Tighten the hex nuts used to attach the blades to the spindles to 50 to 60 lbf. ft. (68 to 81 N-m). Tighten the hex nuts used to attach the pulleys to the spindles to 90 to 110 lbf. ft. (122 to 149 N-m). Check and retighten, if necessary, all nuts and bolts once a year thereafter.

BLADE SPINDLE ASSEMBLY

The blade spindle assembly is a sealed, pre-greased precision pre-set Timken bearing package. Special care must be taken when blade is removed. With blade removed, the shaft and pulley are no longer held and can slip out of spindle housing. If this should occur, bearing spacer (see figure 26) will be free to float since clamping force has been eliminated. To reassemble, insert shaft with pulley into spindle housing, and insert one finger in through the bottom of spindle assembly to line up bearing spacer so that shaft will go through.



Never pound or force shaft through spindle housing.

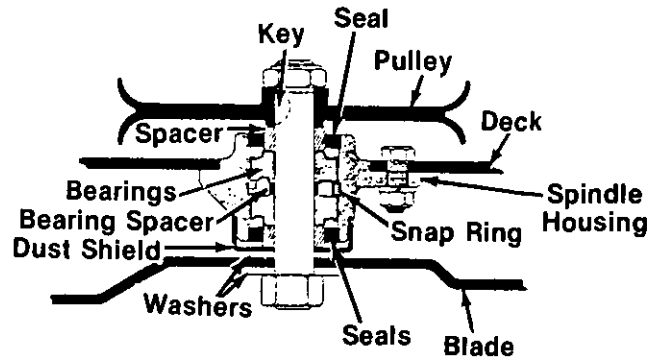


FIGURE 26.

CLEANING AND BLADE CARE



Be careful not to cut yourself when sharpening the blades or cleaning the underside of the mower.

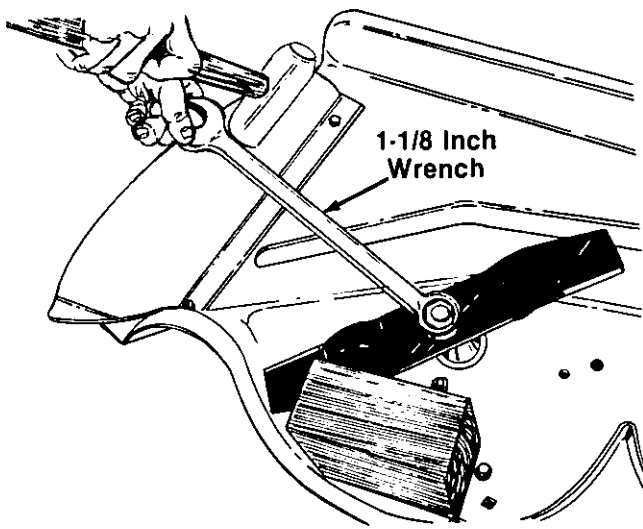
Clean the underside of the mower at the end of the mowing season and when the build-up of cut material on the underside is noticed. Also, remove the belt cover and remove any accumulation.

The cutting blades must be kept sharp at all times.



Sharpen ends evenly so that the blades remain balanced and the same angle of sharpness is maintained. However, if the cutting edge of a blade has been sharpened to within 3/8-inch of the wind wing, it is recommended that new blades be installed. New blades are available at your authorized dealer.

When removing the blades, hold the hex shaped pulley hub with a 1 1/4-inch socket wrench to remove the hex nut holding the blade. A block of wood may be placed between housing and cutting edge of blade to assist in removal of hex nut securing blade. See figure 27.



Wood Block in Position

FIGURE 27.

After replacing blades, grease the threaded end of the shaft to prevent rust build-up.

When replacing the blades, be sure they are assembled so the cutting edges are in the direction of rotation with the wind wings pointed upward. Tighten the nuts 50 to 60 lbf. ft. (68 to 81 N-m).



If the spindle pulley nuts are removed for any reason, they should be retightened to 90 to 110 lbf. ft. (122 to 149 N-m) torque when replaced.

LUBRICATION

Deck spindles are pre-greased and sealed at the factory. No additional lubrication is required. For winter storage, clean the underside of deck, and apply a light coat of oil to prevent rust. Also, lubricating the tension spring with a few drops of light oil is recommended. See figures 28 and 29.

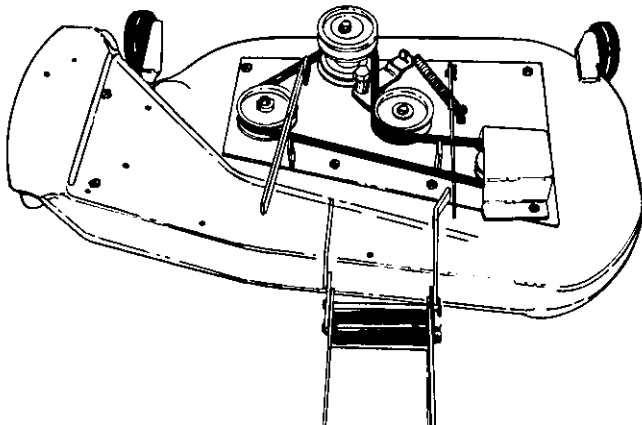


FIGURE 28.—36-inch Deck

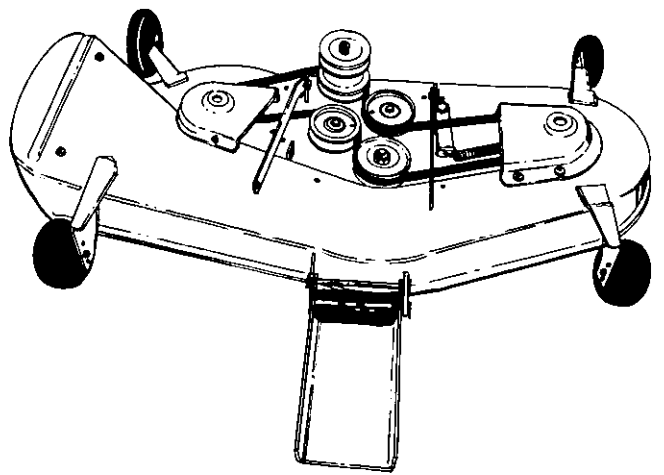


FIGURE 29.—44-inch Deck Spindle Belt—36-inch Mower (See figures 30, 31 and 32.)

To replace spindle drive belt, remove belt cover. Release spring tension. Remove the old belt. Install the new belt around pulleys as shown. Be certain belt is in the lower groove of the center pulley. Reinstall belt cover.

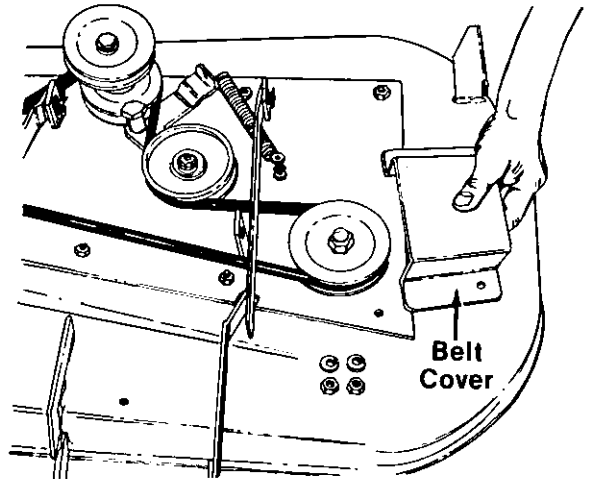


FIGURE 30.

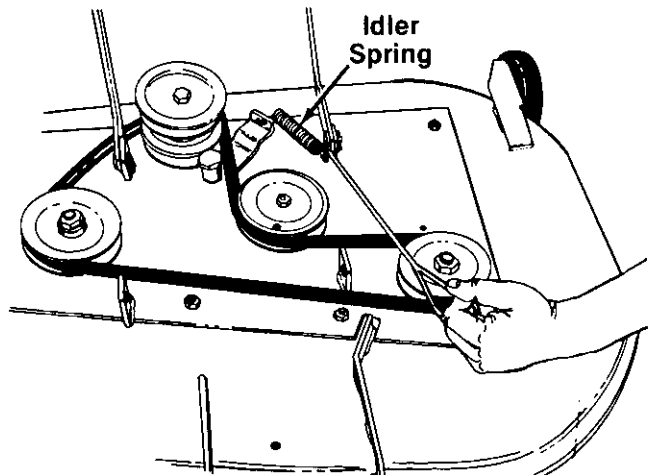


FIGURE 31.

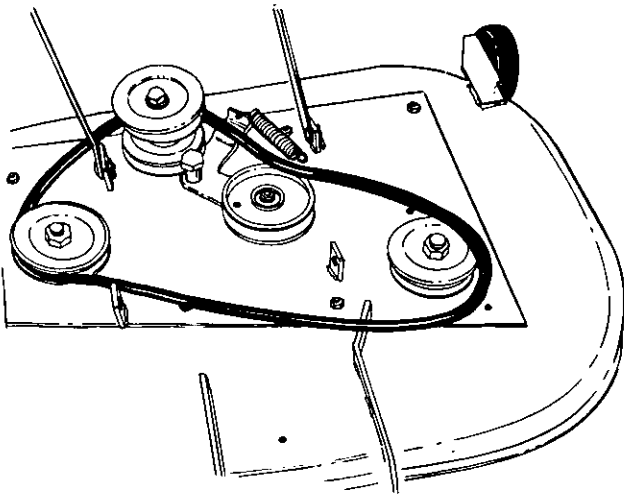


FIGURE 32.

Spindle Belt—44-inch Mower
(See figures 33, 34 and 35.)

To replace spindle drive belt, remove belt covers. Release spring tension. Remove the old belt. Install the new belt around pulleys as shown. Be certain belt is in the lower groove of the center pulley. Reinstall belt covers.

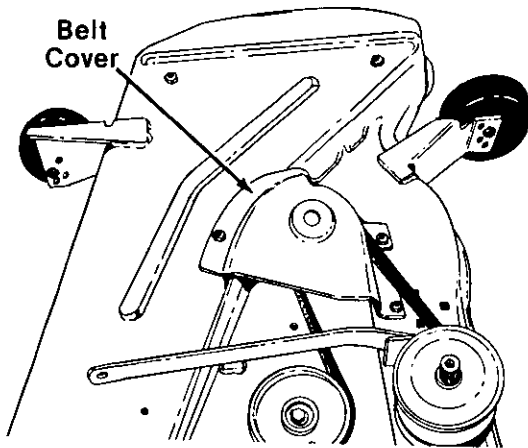


FIGURE 33.

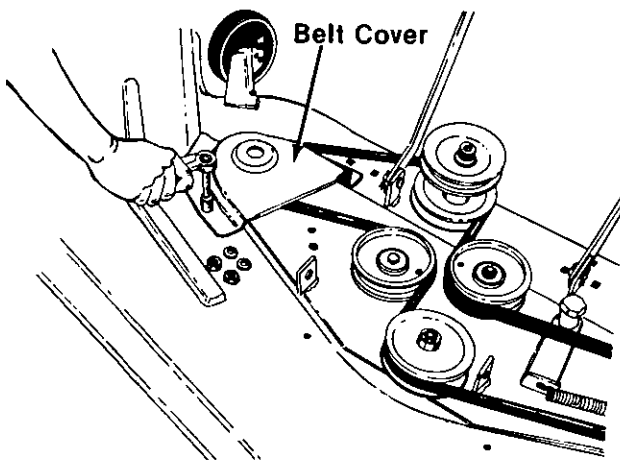


FIGURE 34.

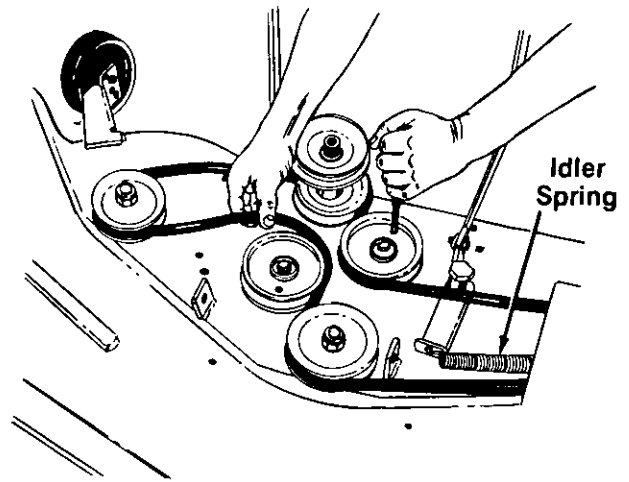


FIGURE 35.

MOWING



To avoid possible injury, do not allow anyone in the area opposite the discharge chute while mowing. Although the area has been supposedly cleared of foreign objects, small objects may have been overlooked and may be discharged by the mower.

For best results it is recommended that the first two laps should be cut with the discharge being thrown towards the center. After the first two laps, reverse the direction to throw the discharge to the outside for the balance of cutting. This will give a better appearance to the lawn.

Do not cut the grass too short, as the mower will tend to scalp the grass. Short grass invites weed growth, and yellows quickly in dry weather.

Mowing should be done with the engine at full throttle. Do not mow at high ground speed.

During certain times of the year and under some conditions, the mower may leave streaks of uncut material.

Streaking may occur when attempting to mow heavy weeds and tall grass. Under these conditions it may be necessary to go back over the cut area a second time to get a clean cut.

The following practices will help eliminate streaking:

1. Mow the area more often so the grass doesn't get too tall and heavy.

2. Operate the tractor at full throttle and lower forward speeds.
3. Keep the blades sharp and replace blades when worn. Refer to section on blade care on page 20.
4. Follow the mowing procedure shown in figure 36.

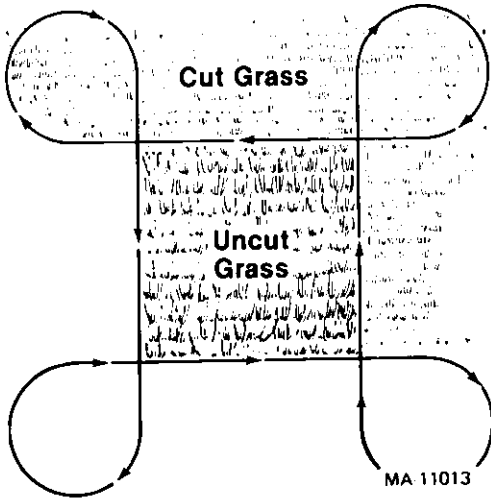
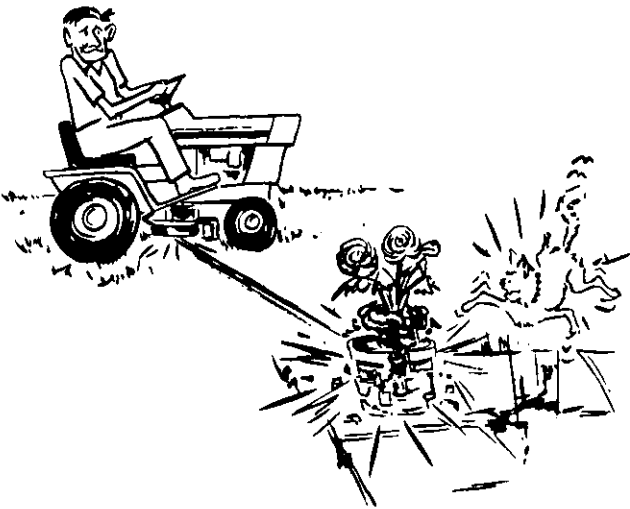


FIGURE 36.



WARNING

Never direct discharge of material toward by-standers nor allow anyone near the machine while in operation.

ATTACHING MOWER TO TRACTOR

36-inch deck—assemble the front hanger assembly to the tractor as shown in figure 37.

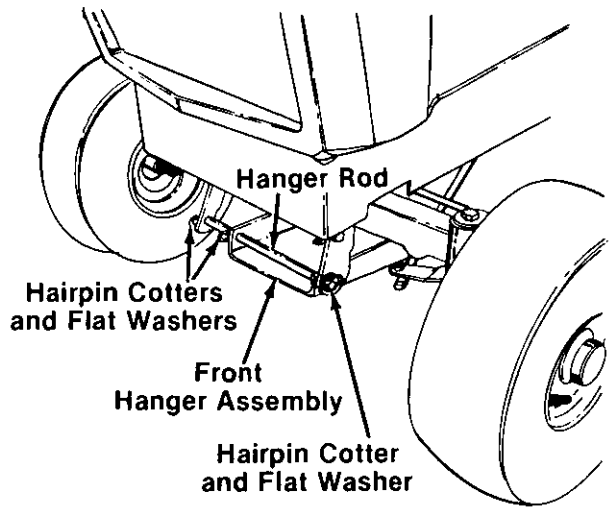


FIGURE 37.
44-inch deck—assemble the front hanger assembly to the tractor as shown in figure 38.

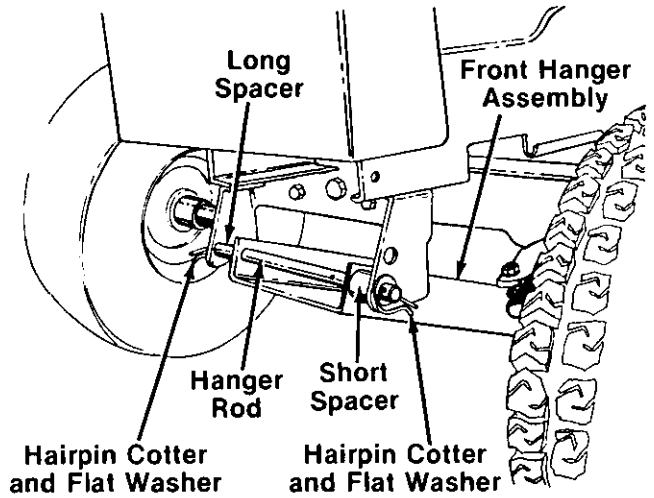


FIGURE 38.
Attach deck hangers using hairpin cotters and flat washers as shown in figures 39 through 41.

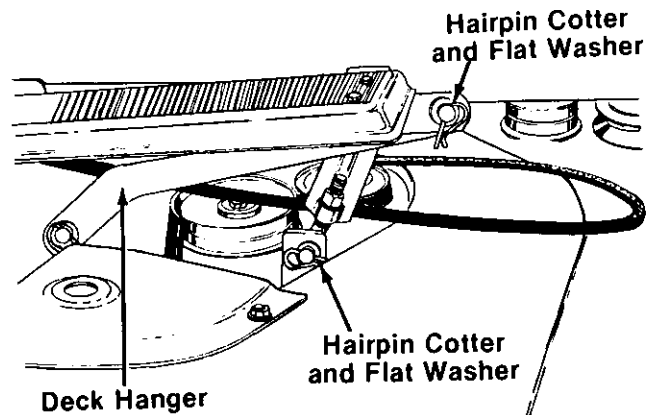


FIGURE 39.—Right Side of Deck

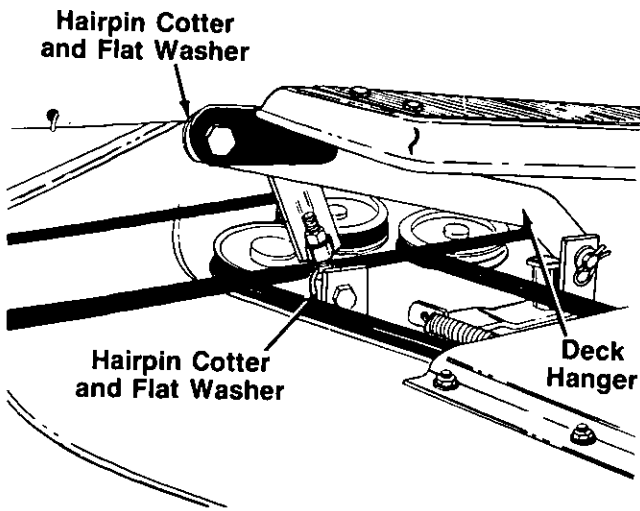


FIGURE 40.—Left Side of 36-inch Deck

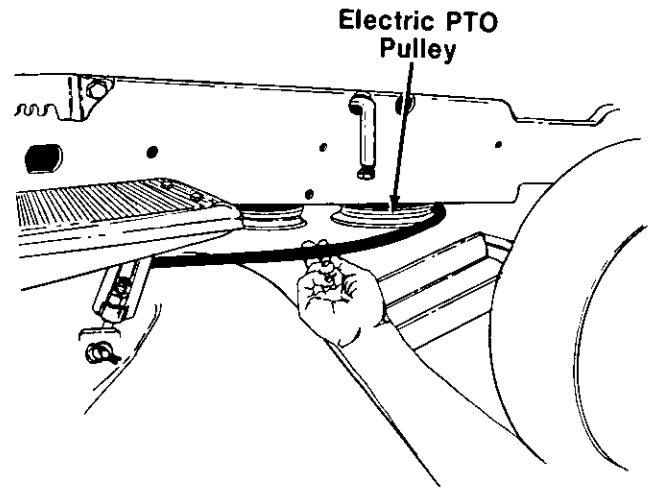


FIGURE 42.

Pull idler pulley on tractor toward the outside of the unit and place belt behind idler pulley. See figure 43.

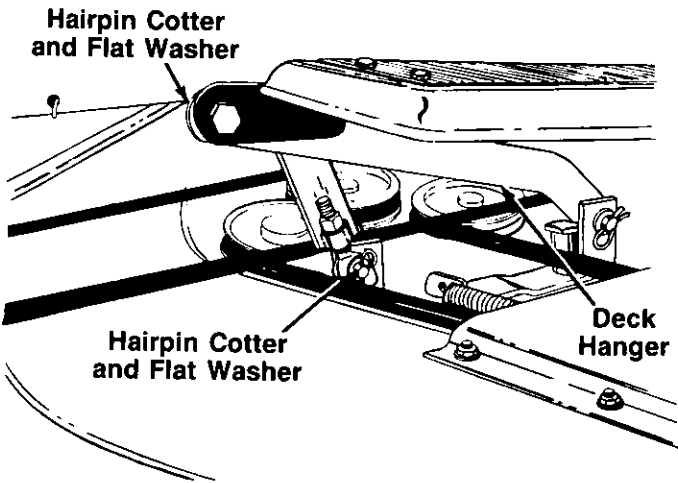


FIGURE 41.—Left Side of 44-inch Deck

Install spindle belt by slipping belt over electric PTO pulley. See figure 42.

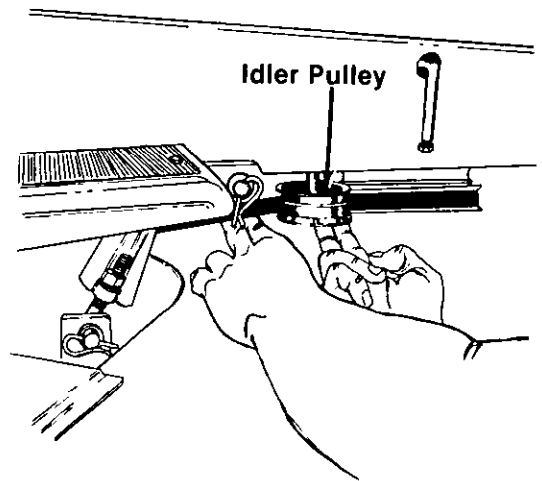


FIGURE 43.

TROUBLE SHOOTING

Possible Cause

Possible Remedy

LACK OF POWER

Choke partially closed	Open choke.
Restricted air filter element	Clean or replace element.
Carburetor improperly adjusted	Adjust carburetor.
Faulty ignition	Check spark plug.*

HARD TO START OR WILL NOT START

No gasoline in fuel tank or carburetor	Fill the fuel tank with non-leaded or regular gasoline and check the carburetor, and fuel shut-off valve.
Engine will not crank	The Lawn Tractor has an interlock safety starting system. The parking brake must be locked, with the transmission gear shift lever in neutral. PTO switch must be off. Charge the battery.
Choked improperly, flooded engine	Follow starting instructions.
Water in gasoline	Drain the fuel tank and carburetor. Use new fuel and dry the spark plug(s).
Defective ignition or loose wiring	Check the wiring and spark plug(s).
No spark	Check the high tension wire. Charge the battery.
Spark plug dirty or improper gap	Clean, adjust the gap to .030 inch, or replace the plug.

ENGINE OPERATES IRREGULARLY, KNOCKS, OR SMOKES

Spark plug dirty, wrong gap, or wrong type	Clean, reset the gap to .030 inch, or replace.
Restricted air cleaner	Clean or replace the element.
Running on choke position	Move throttle control to fast position.
Carburetor improperly adjusted	Adjust carburetor.
Poor or weak spark	Check spark plug and wiring.*
Engine smokes	Check combination oil filler cap and oil level gauge and be sure cap is securely tightened.
Engine incorrectly timed	*

ENGINE OVERHEATS

Excessive load on engine	Reduce excessive load.
Lack of lubrication	Fill crankcase to proper level.
Carburetor improperly adjusted	Adjust carburetor.
Engine cooling fins plugged	Clean out trash.
Engine improperly timed	*

FREQUENT BATTERY DISCHARGE

Wiring	Check all wire terminals for looseness.
Battery	Replace battery if necessary.

HYDROSTATIC UNIT OVERHEATS

Fan blades broken	Replace fan.*
Fan blades excessive wear	*

*See your authorized dealer.

SPECIFICATIONS

CAPACITIES (Approximate)

Fuel Tank
 Crankcase
 Transaxle

805 (192) Cadet	1105 (292) Cadet	1605 (392) Cadet
3 Gallon		
3 Pints		
2¾ Pints		

ENGINE

Make and Model
 Number of Cylinders
 Bore
 Stroke
 Displacement
 Engine speed (Governed)
 Minimum speed
 Maximum no load speed
 (High Idle)
 Valve clearance (Engine Cold)
 Intake
 Exhaust

Briggs/Stratton	Briggs/Stratton	Briggs/Stratton
191707	253707	402707
One	One	Two
3-inch	3-7/16-inch	3-7/16-inch
2¾-inch	2-5/8-inch	2-1/16-inch
19.44 cu. in.	24.36 cu. in.	40.0 cu. in.
1800 RPM		
3500	3500	3400
.005-.007-inch		
.009-.011-inch		

ELECTRICAL SYSTEM

Ignition
 Spark plug gap
 (Champion RCJ-8 or equivalent)
 Breaker point gap
 Battery terminal grounded

Magneto		
.030-inch		
20 amp. SLO-BLO		
Negative		

GENERAL

Type cutter bar
 Width of cut
 Adjustable cutting height (Approx.)
 Mower drive
 Tire sizes
 Front—2 ply tubeless
 Rear—2 ply tubeless
 Tire inflation pressure
 Turning radius
 Wheel base
 Length overall
 Weight (Approx.)

Suction lift		
36-inch	36-inch or 44-inch	44-inch
1½ to 4½-inch		
V-belt with electric clutch		
15 x 6-6		
20 x 10-8		
12 lbs./sq. inch		
72-inches		
45-inches		
68½-inches		
473 lbs.	481 lbs./497 lbs.	528 lbs.

GROUND SPEEDS (5 Speeds Forward, 1 Reverse)

Speed: Forward 0 to 5.5 mph
 Reverse 0 to 2.35 mph

LUBRICATION TABLE

Point of Lubrication	Check at Hours	Change at Hours	Capacity	Anticipated Air Temperature		
				Above +40°F.	+0°F. to 100°F.	Below 20°F.
Engine crankcase	Check before each	Every 30	3 Pints	Engine Oil SAE30	Engine Oil SAE10W30 or SAE10W40	Engine Oil SAE5W20 SAE5W30
Steering gear housing	25		As needed	Two strokes of the lubricator using 251H EP grease or equivalent No. 2 multi-purpose lithium grease.		
Steering knuckles & front axle pivot bolt	10		Use 251H EP grease or equivalent No. 2 multi-purpose lithium grease and apply two or three strokes of the lubricator or sufficient grease to flush out old grease and dirt.			
Front wheel bearings	100 or Yearly		Remove front wheels and pack bearings with 251H EP grease or equivalent No. 2 multi-purpose lithium grease and reinstall wheels.			

LUBRICATION GUIDE

The life of any machine depends upon the care it is given. Proper lubrication is a very important part of that care.

Be certain that all lubrication fittings are assembled in place, using the lubrication illustrations as a guide. Always lubricate the tractor thoroughly before taking it to the field. Use a pressure lubricating gun. Be sure all fittings are free from dirt and paint so the lubricant is certain to enter the bearing. Always force the lubricant through the full length of each bearing until it emerges at the end, carrying with

it the worn lubricant and any dirt that may have entered the bearing.

Miscellaneous working parts not provided with lubrication fittings should be oiled daily with a good grade of lubricating oil.

Lubricant is cheap. Use plenty of it. Worn parts can be expensive to replace.

Keep your supply of lubricating oil and grease stored in clean containers, and covered to protect from dust and dirt.

Keep the lubricating gun nozzle clean and wipe dirt from grease fittings before lubricating.

The symbols in the illustration indicate the method of application and the hourly intervals to apply the lubricant.



Use a pressure lubricating gun and apply 251H EP grease (or equivalent No. 2 multi-purpose lithium grease) sufficient to flush out the old grease and dirt. Lubricate at hourly intervals indicated on symbols.



Dipstick (11 and 16 H.P. Units), use to check engine oil before each use.



CAUTION

Prolonged or repeated skin contact with used motor oil may be harmful. Wash skin with soap and water.

STANDARD TORQUE DATA FOR INCH NUTS AND BOLTS — FOOT POUNDS

Recommended torque for all Standard Unplated Nuts and Bolts, provided:

- A. Surface finish is oxide coated, oil quenched or bright.
- B. All thread surfaces are clean and lubricated with SAE-30 engine oil or equivalent (See NOTE.)
- C. Joints are rigid, that is, no gaskets or compressible materials are used.
- D. When reusing nuts or bolts use minimum torque values.

NOTE: Multiply the standard torque by:
 .65 when finished jam nuts are used.
 .70 when Molykote, white lead or similar mixtures are used as lubricants.
 .75 when phosphate coated and oiled bolts or nuts are used.
 .85 when cadmium or zinc dichromate bolts or nuts are used.
 .90 when hardened surfaces are used under the nut or bolt head (this applies to standard unplated hardware only).

1 FOOT POUND = 1.355 NEWTON METERS

Bolt or Stud Diameter	Type 1 Studs Only		Type 1 Bolts 6" length or less		Type 1 Bolts longer than 6"		Type 5 (all lengths)		Type 8 (all lengths)			
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Only when used † in cast (gray) iron		All other applications	
Inches									Min.	Max.	Min.	Max.
1/4	5	6	6	7	4	4	9	10	11	13	13	14
5/16	12	13	11	13	7	8	18	20	22	25	25	28
3/8	21	24	21	24	13	14	33	37	41	46	45	50
7/16	35	38	35	38	20	23	53	60	65	74	75	85
1/2	52	58	52	59	31	35	80	90	100	112	115	130
9/16	70	80	75	85	45	51	115	130	145	160	165	185
5/8	98	110	104	117	62	70	160	180	200	225	225	255
3/4	174	195	185	205	110	125	285	320	355	400	400	450
7/8	280	315	180	200	180	200	460	575	570	640	645	725
1	420	470	265	300	265	300	685	720	855	960	970	1090
1-1/8	595	670	380	425	380	425	850	950	1210	1360	1375	1545
1-1/4	840	945	535	600	535	600	1200	1350	1705	1920	1940	2180
1-3/8	1100	1240	700	785	700	785	1570	1760	2235	2515	2540	2860
1-1/2	1470	1640	925	1045	925	1045	2080	2340	2970	3340	3375	3795

† When bolt penetration is 1-1/2 times the diameter of the bolt.

BOLT TYPE IDENTIFICATION CHART

IH TYPE	S.A.E. GRADE	DESCRIPTION	BOLT HEAD MARKING*
1	1 EQUIVALENT OR 2	WILL HAVE A STANDARD MONOGRAM IN THE CENTER OF THE HEAD Low or Medium Carbon Steel Not Heat Treated	
5	5	WILL HAVE A AND 3 RADIAL LINES Quenched and Tempered Medium Carbon Steel	
8	8	WILL HAVE A AND 6 RADIAL LINES Quenched and Tempered Special Carbon or Alloy Steel	

*The center marking identifies the bolt manufacturer.

